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60/412,492 20 September 2002 (20.09.2002) US
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- (81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
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12 August 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GD2 LIGANDS

(57) Abstract: The invention provides ligands of ganglioside GD2, including peptide ligands such as GGITNYNSALM; YCGGITNYNSACY; YCITNYNSCY; YCGGITNYNCY; YCTNYGVHCY; YCTNYGVVCY; GGLIANYNTS; YCGGLIANYNCY; YCGGLIANYNTSCY; and, YCIANYNTCY. GD2 ligands of the invention may for example be used to treat or diagnose diseases such as cancers in which cells express GD2, including neuroblastomas.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01389

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K7/04 C07K7/64 A61K38/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, EMBASE, BIOSIS, WPI Data, PAJ, PASCAL

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CARNEMOLLA B ET AL: "HUMAN TENASCIN-R" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 271, no. 14, 5 April 1996 (1996-04-05), pages 8157-8160, XP000606961 ISSN: 0021-9258 figure 1  ----- -/--	2,5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

14 January 2004

Date of mailing of the international search report

14.06.04

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01389

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PROBSTMEIER RAINER ET AL: "Tenascin-C inhibits beta1 integrin-dependent cell adhesion and neurite outgrowth on fibronectin by a disialoganglioside-mediated signaling mechanism" GLYCOBIOLOGY, vol. 9, no. 2, February 1999 (1999-02), pages 101-104, XP009023657 ISSN: 0959-6658 page 107, right-hand column, lines 10-15; figure 4	2,5
A	TSAO CHUN-YEN ET AL: "Identification of GD2 ganglioside peptide mimics by using phage display peptide libraries" PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH ANNUAL, vol. 43, March 2002 (2002-03), page 280, XP001157107 93rd Annual Meeting of the American Association for Cancer Research; San Francisco, California, USA; April 06-10, 2002, March, 2002 ISSN: 0197-016X the whole document	1-19
A	CHEUNG NAI-KONG V ET AL: "Disialoganglioside G-D2 anti-idiotypic monoclonal antibodies" INTERNATIONAL JOURNAL OF CANCER, vol. 54, no. 3, 1993, pages 499-505, XP009023655 ISSN: 0020-7136 page 504, right-hand column, last paragraph; tables 4,5	1-19
A	TUR MEHMET KEMAL ET AL: "An anti-GD2 single chain Fv selected by phage display and fused to Pseudomonas exotoxin A develops specific cytotoxic activity against neuroblastoma derived cell lines" INTERNATIONAL JOURNAL OF MOLECULAR MEDICINE, vol. 8, no. 5, November 2001 (2001-11), pages 579-584, XP009023656 ISSN: 1107-3756 figures 3,4	1-19
A	US 5 935 821 A (CHATTERJEE MALAYA ET AL) 10 August 1999 (1999-08-10)	

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## INTERNATIONAL SEARCH REPORT

Application No  
PCT/CA 03/01389

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>SARAGОВI H URI ET AL: "Cell surface GD2 gangliosides act as genuine receptors: ligands activate p56Lck signal transduction and regulate tumorigenesis in vitro and in vivo." FASEB JOURNAL, vol. 17, no. 4-5, March 2003 (2003-03), page Abstract No. 363.4, XP009023658 FASEB Meeting on Experimental Biology: Translating the Genome; San Diego, CA, USA; April 11-15, 2003 ISSN: 0892-6638 (ISSN print) the whole document -----</p>	1-19

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA 03/01389

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-19 (completely)

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

**Continuation of Box I.1**

Although claims 6, 8-10, 17-19 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Although claim 7 is directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 03/01389

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5935821	A	10-08-1999	US 5612030 A	18-03-1997
			US 5977316 A	02-11-1999
			US 6509016 B1	21-01-2003
			AU 713331 B2	02-12-1999
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			CA 2210158 A1	25-07-1996
			EP 0807176 A2	19-11-1997
			JP 2002508651 T	19-03-2002
			WO 9622373 A2	25-07-1996
			US 2003114398 A1	19-06-2003

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